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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,609

11/01/2005

Elias Klemm

1-17010

8173

1678 7590 08/17/2009  
MARSHALL & MELHORN, LLC  
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EXAMINER

GALLIS, DAVID E

ART UNIT

PAPER NUMBER

1625

MAIL DATE

DELIVERY MODE

08/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,609	<b>Applicant(s)</b> KLEMM ET AL.	
	<b>Examiner</b> DAVID E. GALLIS	<b>Art Unit</b> 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2005 and 03 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-25 is/are pending in the application.
- 4a) Of the above claim(s) 13-19, 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-23 is/are rejected.
- 7) ☒ Claim(s) 20-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/1/05</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 13 through 25 are pending. Claims 1 through 12 have been canceled. Claims 13 through 25 have been newly added. Claims 13 through 19, 24 and 25 have been withdrawn from consideration. Applicants' claim to foreign priority by application GERMANY 102 48 599.2 filed October 17, 2002 is acknowledged.

### ***Election/Restrictions***

2. Applicants' election of Group II, claims 20 through 23 is acknowledged. Applicant states that election was made without traverse, therefore the election is hereby MADE FINAL. The subject matter for the elected Group II is as follows:

II. Claims 20 through 23 drawn to a device for the recovery of a gaseous phase from a liquid fluid on a commercial scale, said device comprising a modular falling-film evaporator containing at least one stack of vertical or inclined plate-type modules, at least every other module being designed as an evaporator module in that it features one or several spaces, through which a heat exchange fluid can flow, and gap-shaped evaporation chambers between the side surfaces of essentially equal-sized rectangular modules, with the surfaces facing each other, wherein the evaporator modules feature a set of parallel micro-channels on at least one side facing the gap-type evaporation chambers, the orientation of the micro-channels corresponding to the direction of the liquid fluid stream flowing therein by gravity and/or capillary forces, and a device for feeding a liquid fluid into the micro- channels, the gap-type evaporation chambers

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being open at the top and/or bottom essentially over the entire width of the module, and that at least one stack being arranged in a vessel equipped with a device for withdrawing a gas phase and a device for withdrawing a liquid phase.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 20 through 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blomgren et al. (US 5,203,406, April 20, 1993, cited by Applicants), in view of Ishida et al. (US 6,173,762, January 16, 2001, cited by Applicants).

5. Claims 20 through 23 are drawn to a device for the recovery of a gaseous phase from a liquid fluid on a commercial scale, said device comprising a modular falling-film evaporator containing at least one stack of vertical or inclined plate-type modules, at least every other module being designed as an evaporator module in that it features one or several spaces, through which a heat exchange fluid can flow, and gap-shaped evaporation chambers between the side surfaces of essentially equal-sized rectangular modules, with the surfaces facing each other, wherein the evaporator modules feature a set of parallel micro-channels on at least one side facing the gap-type evaporation chambers, the orientation of the micro-channels corresponding to the direction of the liquid fluid stream flowing therein by gravity and/or capillary forces, and a device for

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feeding a liquid fluid into the micro- channels, the gap-type evaporation chambers being open at the top and/or bottom essentially over the entire width of the module, and that at least one stack being arranged in a vessel equipped with a device for withdrawing a gas phase and a device for withdrawing a liquid phase. Claims 21 through 23 further limit claim 20, wherein the gap-type evaporator is closed on the sides, the evaporator comprises two or more zones, and the stacks are arranged axially or laterally off-set above each other.

6. Claims 20 through 23 are obvious over Blomgren et al. teaching a gap-type falling film evaporator with vertically stacked plates (heat exchanger plates) forming equally sized evaporator chambers in every other space (see Fig. 1 – Fig. 6). The chambers have an inlet and outlet for vapors formed on the heat exchangers (Fig. 1 and column 3, lines 25-34), as well as inlets for and outlets for heat exchange fluid. As shown in the figures, the sides of the plates are closed and the stacks are laterally off-set above one another (see Fig. 1). Although Blomgren et al. does not teach micro-channeling on the plates, Ishida et al. remedies this deficiency by teach the inclusion of grooves on the heat exchanger to improve the heat transmission (see abstract). These grooves are at most 0.8 mm in depth (column 3, lines 1-7 and Fig. 1), but certainly smaller than maximal 20 mm dimension as instantly disclosed. The serial stacking of evaporator modules, just as that of serial use of reactor process channels is know in the art and obvious to one skill in the art. The design by Blomgren et al. comprises essentially all the elements of the instant invention with the exception of micro-channels. The superior heat transfer characteristics of grooves or micro-channels as

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demonstrated by Ishida et al would provide motivation for inclusion of such a feature in the evaporator design taught by Blomgren et al..

***Claim Objections***

7. Claims 20 through 23 are objected to on the ground of improper dependency on withdrawn claim 13. Claim 20 must be amended to read in proper independent form.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Gallis whose telephone number is 571-272-9068. The examiner can normally be reached on Mon-Thur 8:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-1600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janet L. Andres/

Supervisory Patent Examiner, Art Unit 1625

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David E. Gallis  
Patent Examiner